THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was **not** written for publication in a law journal and (2) is **not** binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte RICHARD J. WONG

_____

Appeal No. 1998-0338
Application No. 08/350,865

_____

ON BRIEF

_____

Before THOMAS, JERRY SMITH and HECKER, ***Administrative Patent Judges***.

HECKER, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 10 and 12 through 23. Claim 11 is indicated as being allowable. As the result of an amendment after final rejection, a rejection under 35 U.S.C. § 112, second paragraph has been dropped[1], resulting in the allowability of claims 9

[1] See paper no. 23, mailed Oct. 27, 1998.

and 23 since there is no prior art rejection for these claims.

The invention relates to a bond pad such as that used in a semiconductor integrated circuit. Stress on parts of a bond pad makes them susceptible to cracking (see Figure 2 and crack 16). Looking at Figure 3, an elongated strip-shaped volume of oxide (36) in contact with the foundation layer (22) underlying the bond pad, along with strip-shaped openings (note width B of the opening) in the metal plate (24) overlying the foundation layer (22), relieves this stress.

Representative independent claim 1 is reproduced as follows:

1. A bond pad structure, comprising:

a first metal plate, an opening existing in said first metal plate;

a second metal plate disposed over said first metal plate and extending over said opening;

a layer of oxide disposed between said first metal plate and said second metal plate, a plurality of vias formed in said layer of oxide between said first metal plate and said second metal plate; and

a plurality of conductive plugs, each of said conductive plugs being disposed in a respective one of said vias, each of said conductive plugs being

electrically coupled to said first metal plate and said second metal plate.

The references relied on by the Examiner are as follows:

Nishimoto 5,289,036 Feb. 22, 1994
Brugge 5,412,250 May 2, 1995 (filed Sep. 24, 1993)

Appellant's Admitted Prior Art, Figure 2 (APA)

Claims 12 through 14 and 16 through 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by APA.

Claims 1 through 4, 6 through 8, 10, 19 and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over APA in view of Nishimoto.

Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over APA and Nishimoto and further in view of Brugge.

Claim 15 stands rejected under 35 U.S.C. § 103 as being unpatentable over APA in view of Nishimoto.

Claims 20 and 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over APA in view of Nishimoto.

Rather than repeat the arguments of Appellant or the Examiner, we make reference to the brief, reply brief, answer and supplemental answer for the details thereof.

OPINION

After a careful review of the evidence before us, we agree with the Examiner that claims 12, 13, 17 and 18 are properly rejected under 35 U.S.C. § 102. Thus, we will sustain the rejection of these claims but we will reverse the rejection of remaining claims on appeal for the reasons set forth ***infra***.

At the outset, we note that Appellant has indicated all claims stand but do not fall together (brief-page 6). The Examiner indicates that no reasons had been set forth as required under 37 CFR § 1.192(c)(7) and (c)(8) (answer-page 3). In response, Appellant indicated that the reasons can be set forth in the argument section, and Appellant had done this (reply brief-page 2). Our review of the brief does not bear this out. We find Appellant has argued claims 12 through 14 and 16 through 18 together (brief-pages 6-9), claims 1 through 8, 10, 15 and 19 through 22 together (brief-pages 9-11), claim 6 separately (brief-page 11), and claim 14 inferentially separately (reply brief-page 4). Thus, we will treat claims

12 through 13 and 16 through 18 as standing or falling together with claim 12 as the representative claim; claims 1 through 8, 10 and 19 through 22 as standing or falling together with claim 1 as the representative claim; claim 6 separately; and claims 14 through 16[2] as standing or falling together with claim 14 as the representative claim.

With respect to claim 12, the Examiner indicates that APA (Figure 2) teaches the claimed invention with mesh oxide 15 being the "means for transferring stress" (answer-page 5).

Appellant argues that the claimed "means for transferring stress" must be limited to that described in the specification and equivalents thereof, citing 35 U.S.C. § 112, paragraph 6 and case law (brief-page 6 and 7). Appellant complains that the Examiner never stated a proper 35 U.S.C. § 112, paragraph 6, analysis (brief-page 8). Furthermore, Appellant argues, "That the mesh oxide of the embodiment of Figure 3 and the mesh oxide of the prior art Figure 2 both transfer stress, does not make them 'the same'". (Brief-pages 7 and 8.)

[2] Claim 14 is being treated as argued separately, and claims 15 and 16 depend from 14.

The Examiner responds, ". . . the mesh oxide layers are one and the same. Therefore, the Appellant's disclosed prior art discloses a 'means for transferring stress' in the same exact manner as the claimed invention as describe[d] in claim 12." (Answer-page 9.)

We agree with the Examiner. There is nothing in claim 12 that requires the oxide to be different than that in APA. Appellant's argument that they are not "the same" just because they both "transfer stress" misses the point. All that is claimed is a "means for **transferring stress**" (emphasis added), not a difference in mesh oxides.

Appellant would have us read claim 12 as including openings in the lower metal plate (i.e., the first metal plate, directly over the foundation layer), and that such openings are not shown in APA. This is reasoned by the fact that claim 14, dependent from claim 12, defines the "means for transferring stress" as being in contact with the foundation layer. This would require an opening in the lower metal plate, not shown in APA (reply brief-page 4).

Appellant is not permitted to engage "in a *post hoc* attempt to redefine the claimed invention by impermissibly incorporating language appearing in the specification into the claims." ***In re Paulsen***, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994). Claim 14 refines the “stress transferring” means to be
“a volume of oxide, . . . contacting a planar upper surface of said foundation layer.” To read the limitations of claim 14 into claim 12 would make claim 14 redundant with claim 12. The claim 12 language is broader than claim 14 and only requires the “stress transferring” means to be “directly under said [upper] conductive plate, . . . [and] disposed between said conductive plugs.” This is clearly shown in APA, and requires no holes in the lower conductive plate. Appellant’s specification supports this analysis wherein it states “In some embodiments, there are **no openings** in the first [lower] plate but rather a relatively wide elongated volume of oxide between the first plate and the second plate transfers stress without cracking and prevents the oxide mesh from cracking.”

(Emphasis added.) (Specification page 8, line 35 to page 9, line 4.)

In view of the foregoing, we will sustain the Examiner's rejection of claim 12, and likewise claims 13, 17 and 18 which stand or fall therewith.

As pointed out by Appellant, claim 14 requires the "means for transferring" to be a volume of oxide which contacts the foundation layer. As also pointed out by Appellant, this requires an opening in the lower conductive plate, not shown by APA (reply brief-page 4).

It is axiomatic that anticipation of a claim under § 102 can be found only if the prior art reference discloses every element of the claim. ***See In re King***, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) and ***Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co***., 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984). "Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention." ***RCA Corp. v. Applied Digital Data Systems, Inc.***, 730 F.2d 1440, 1444, 221

USPQ 385, 388 (Fed. Cir. 1984), *cert. dismissed,* 468 U.S. 1228 (1984), *citing* ***Kalman v. Kimberly-Clark Corp.***, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983). Since APA does not disclose any openings in the lower plate, the Examiner's rejection fails, and we will not sustain the rejection of claim 14 under 35 U.S.C. § 102. Likewise, we will not sustain the rejection of claims 15 and 16 which depend from claim 14 and include the same unmet limitation.

With respect to claim 1, the Examiner reasons that it would have been obvious to use the openings or slits of Nishimoto in APA "to facilitate the electrical connection or bond." (Answer-page 5.) The Examiner states "Nishimoto discloses that openings or slits could be used to alleviate stress and avoid cracking a relatively rigid insulative layer when it is in contact with a conductive layer. Therefore, Nishimoto provides the proper motivation to support the 35 U.S.C. § 103 rejection." (Answer-page 13.)

Appellant argues that the Examiner has used Nishimoto to solve a problem recognized by Appellant, not known in the prior art. Appellant contends, even if Appellant's problem

were known in the prior art, Nishimoto solves a different problem of cracking in a passivation layer over metal wiring. Nishimoto's problem occurs when the width of the metal wiring is large, and

adds slits to reduce the effective width. Furthermore, Appellant contends, Nishimoto has its own bond pads but does not have slits there.

It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). In addition, the Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). In addition, the Federal Circuit reasons in ***Para-Ordnance Mfg*. v. SGS Importers Int'l**, ***Inc***., 73 F.3d at 1087-88, 37 USPQ2d at 1239-40, that for the determination of obviousness, the court must answer

whether one of ordinary skill in the art who sets out to solve the problem,

and who had before him in his workshop the prior art, would have been reasonably expected to use the solution that is claimed by the Appellants.

We find that those skilled in the art having the teachings of APA and Nishimoto before them would not have put slits in the lower metal plate.

First, Appellant claims to have discovered the problem. The Examiner has not contested this, nor shown cracking in a bonding pad to be a known problem in the prior art.

Second, even if bonding pad cracks were known in the prior art, we see no motivation to apply Nishimoto's passivation layer cracking solution to bonding pads. Nishimoto's solution is to reduce the effective width of the underlying wiring bus. We are not convinced that one of ordinary skill in the art, seeing Nishimoto, would decide to reduce the effective width of the lower metal plate in the bonding pad of APA.

Third, Nishimoto's bonding pad does not have slits, and this may well be because the pad has no passivation layer to crack. On the other hand, APA has a passivation layer, but the cracking problem does not appear in this layer.

Thus, we are not convinced by the Examiner that it would have been obvious to have made slits in APA, based on Nishimoto. Accordingly, we will not sustain the rejection of claim 1, and likewise claims 2 through 8 and 10 which are dependent from
claim 1 and contain the same unmet limitation. Similarly, we will not sustain the Examiner's rejection of claim 19 which also requires an opening in the lower conductive plate. Claims 20 through 22 depend from claim 19, thus we will not sustain the rejection of these claims.

In view of the foregoing, the decision of the Examiner rejecting claims 1 through 8, 10 and 19 through 22 under 35 U.S.C. § 103 is reversed; additionally, the decision of the Examiner rejecting claims 14 through 16 under 35 U.S.C. § 102 is reversed; however, the decision of the Examiner rejecting claims 12, 13, 17 and 18 under 35 U.S.C. § 102 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JAMES D. THOMAS Administrative Patent Judge	)	
JERRY SMITH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
STUART N. HECKER Administrative Patent Judge	)	

jg

Appeal No. 1998-0338
Application No. 08/350,865

T. LESTER WALLACE
SKJERVEN MORRILL MACPHERSON
FRANKLIN & FRIEL
25 METRO DRIVE SUITE 700
SAN JOSE, CA 95110